



west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone 304/926-0475

Jim Justice, Governor
Austin Caperton, Cabinet Secretary
www.wvdep.org

ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Permit No.: R13-2290M
Plant ID No.: 099-00007
Applicant: Department of Veterans Affairs (VA) Medical Center
Facility Name: Huntington VA Medical Center
Location: Wayne County
SIC Code: 62211 - General Medical and Surgical Hospitals
Application Type: Modification
Received Date: September 15, 2016
Engineer Assigned: John Legg
Fee Amount: \$2,000.00
Date Paid: September 16, 2016
Applicant Ad Date: February 22, 2017
Newspaper: Herald Dispatch (Huntington, WV)
Complete-By Date: June 2, 2017 (Affidavit of Publication arrived 3/2/17 at DAQ)
UTM's: Easting: 367.44 km Northing: 4,248.49 km Zone: 17
Lat/Longs: Latitude: 38.384 N Longitude: -82.517 W
Description: Installation of a new Caterpillar Olympian, Model G150LG6, 150 kW/230.3 bhp, natural gas-fired emergency generator at newly acquired property adjoining the Medical Center. The hours of operation will be limited to 500 hr/yr.

SUMMARY

The VA Medical Center proposes to install a new Caterpillar Olympian, Model G150LG6, 150 kW/230.3 bhp natural gas-fired emergency generator to provide electricity to the facility when purchased power is not available.

Based on operating the new generator engine 500 hr/yr, estimated emissions after controls (catalytic muffler) are: nitrogen oxides (NO_x) at 0.29 lb/hr and 0.07 ton/yr; carbon monoxide (CO) at 0.66 lb/hr and 0.16 ton/yr; and VOC (THC) at 0.01 lb/hr and 0.002 ton/yr.

PROCESS DESCRIPTION

The VA Medical Center operates twelve (12) permitted diesel oil-fueled emergency generators of various design capacities (134 bhp to 1322 bhp) and installation dates (1996 through 2015). The new natural gas-fired emergency generator is the first natural gas-fired emergency generator to be permitted.

Table 1: Permitted Emergency Generator Engines located at the VA Medical Center, Huntington, Wayne County, WV.

Emission Unit ID	Emergency Generator Description		Permitted Under	Year Installed	Design Capacity	Control Device
E-Gen 25 ⁽¹⁾	Uncertified	275 kW, Cummins	R13-2290B	1996	435 bhp	None
E-Gen 23R ⁽¹⁾	Uncertified	440 kW, Caterpillar	R13-2290B	1995	???	None
E-Gen 3a ⁽¹⁾	Uncertified	80 kW, John Deere	R13-2290B	1998	150 bhp	None
E-Gen 3b ⁽¹⁾	Uncertified	125 kW, Onan	R13-2290E	2001	207 bhp	None
E-Gen 2 ⁽¹⁾	Uncertified	125 kW, Onan	R13-2290F	2006	207 bhp	None
E-Gen 1S ⁽¹⁾	Certified	900 kW, Onan	R13-2290H	2009	1,322 bhp	None
E-Gen Mobile ⁽¹⁾	Certified	400 kW, Cummins	R13-2290I	2011	755 bhp	None
E-Gen 5 ⁽¹⁾	Certified	350 kW, Caterpillar	R13-2290I	2011	546 bhp	None
E-Gen 16 ⁽¹⁾	Certified	100 kW, Caterpillar	R13-2290J	2014	134 bhp	None
E-Gen Mobile 2 ⁽¹⁾	Certified	100 kW, Cummins	R13-2290K	2014	324 bhp	None
E-Gen Mobile 3 ⁽¹⁾	Certified	150 kW, Cummins	R13-2290K	2014	324 bhp	None
E-Gen 52 ⁽¹⁾	Certified	600 kW, Caterpillar	R13-2290L	2015	900 bhp	None
E-Gen BRAC ⁽²⁾	Certified	150kW, Caterpillar	R13-2290M	2017	230.3 bhp	None
(1) Diesel-fueled engine. (2) Natural Gas-fired engine.						

Table 2: Information on New Natural Gas-fired Generator Engine to be Located at the VA Medical Center, Huntington, WV.

Emergency Generator Engine (E-Gen BRAC; BRAC)	
Emission Unit ID No.	E-Gen BRAC
Emission Point ID No.	BRAC

Table 2: Information on New Natural Gas-fired Generator Engine to be Located at the VA Medical Center, Huntington, WV.

Emergency Generator Engine (E-Gen BRAC; BRAC)	
Manufacturer	Caterpillar
Model	G150LG6
Model Year	2015
Manufacturer's Rated bhp/rpm	230.3/1800
Date Installation	2017
Engine Manufactured	2015
Source Status	New Source
Is this a Certified Stationary Spark Ignition Engine according to 40 CFR 60 Subpart JJJJ?	Yes
Engine Type	Lean Burn Four Stroke (LB4S)
APCD Type	Catalytic Muffler
Fuel Type	PQ (Pipeline Quality Natural Gas)
Displacement	
Fuel Consumption	1726.1 ft3/hr @ 100%
Operation	500 hr/yr

SITE INSPECTION

DAQ Enforcement Inspector Mike Rowe last inspected the facility on June 18, 2015. At that time the facility was found to be in compliance and was given the inspection code 30.

Directions to the VA Medical Center as given in application:

From Huntington, WV - Rt. 60 W to Carson Street. Left on Carson St. To Spring Valley Dr. Turn right and proceed to VA entrance.

ESTIMATE OF EMISSIONS

Emission rates for the new natural gas-fueled emergency generator engine were calculated using emission factors provided by Olympian and are based on operating the generator a maximum

of 500 hr/yr. In addition to providing electricity when purchased power is unavailable, the generator will be operated for the purpose of maintenance checks and readiness testing.

Table 3: Hourly and Annual Emissions from the VA Medical Center's New Natural Gas-fired, Emergency Generator to be located at Huntington, WV.					
Pollutant		Maximum Emissions (Controlled - Catalytic Muffler)			
		Caterpillar G150LG6, 150 kW/230.3 bhp Emergency Generator Set			
		(g/hp-hr) ⁽¹⁾	(lb/hr)	(ton/yr) ⁽²⁾	(ton/yr) ⁽³⁾
Criteria Pollutants	Nitrogen Oxides (NO _x)	0.57	0.29	0.07	1.29
	Carbon Monoxide (CO)	1.3	0.66	0.16	2.95
	Total Hydrocarbon (THC)	0.02	0.01	0.002	0.045
(1) Estimated using Olympian's "2015 EPA Spark-Ignited Exhaust Emission Data." (2) Annual Based on 500 hr/yr of operation. (3) Annual Based on 8,760 hr/yr of operation.					

Per the requirements of 40 CFR 60, Subpart JJJJ [40 CFR§60.4233(e)], the permittee shall comply with the emission standards in Table 1 of the subpart for the new engine. Note that the emission rates provide in the application after controls (catalytic muffler) are more restrictive than the requirements of Subpart JJJJ.

Table 4: Hourly and Annual Emission Requirements Based on 40 CFR 60, Subpart JJJJ [40 CFR§60.4233(e) for the VA Medical Center's New Natural Gas-fired, Emergency Generator to be located at Huntington, WV.					
Pollutant		Maximum Emission Rate			
		Caterpillar G150LG6, 150 kW/230.3 bhp Emergency Generator Set			
		(g/hp-hr) ⁽¹⁾	(lb/hr)	(ton/yr) ⁽²⁾	(ton/yr) ⁽³⁾
Criteria Pollutants	Nitrogen Oxides (NO _x)	2.0	1.02	0.25	4.47
	Carbon Monoxide (CO)	4.0	2.03	0.51	8.89
	Volatile Organic Compounds (VOC)	1.0	0.51	0.13	2.23

Table 4: Hourly and Annual Emission Requirements Based on 40 CFR 60, Subpart JJJJ [40 CFR§60.4233(e) for the VA Medical Center’s New Natural Gas-fired, Emergency Generator to be located at Huntington, WV.				
Pollutant	Maximum Emission Rate			
	Caterpillar G150LG6, 150 kW/230.3 bhp Emergency Generator Set			
	(g/hp-hr) ⁽¹⁾	(lb/hr)	(ton/yr) ⁽²⁾	(ton/yr) ⁽³⁾
(1) Emission requirements from Table 1 of 40 CFR60, Subpart JJJJ. (2) Annual Based on 500 hr/yr of operation. (3) Annual Based on 8,760 hr/yr of operation.				

REGULATORY APPLICABILITY

After this modification (R13-2290M), the VA Medical Center will remain a non-major, stationary source under Rule 13, a deferred Title V source and an area source for Hazardous Air Pollutants (HAPs).

The following State and Federal Rules were examined for applicability:

45CSR13 - “Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits, and Procedures for Evaluation.”

The VA Medical Center is an existing stationary source that already has a Rule 13 permit (R13-2290L).

The installation of the new emergency generator is considered to be a modification because the generator engine is subject to NSPS Subpart JJJJ.

The VA Medical Center submitted an application (on September 15, 2016), paid a \$2,000 application fee (on September 16, 2016) to modify their current permit, ran a legal advertisement (on February 22, 2017), and provided proof of publication that the legal advertisement ran in the form of a legal affidavit received by the DAQ (on March 2, 2017) at which time the application was deemed complete.

45CSR16 “Standards of Performance for New Stationary Sources”

Adopts by reference the standards of performance for new stationary sources promulgated by the United States Environmental Protection Agency pursuant to section 111(b) of the federal Clean Air Act, as amended (CAA). This rule codifies general procedures and criteria to implement the standards of

performance for new stationary sources set forth in 40 CFR Part 60. The rule also adopts associated reference methods, performance specifications and other test methods which are appended to these standards.

40 CFR 60, Subpart JJJJ applies to the new natural gas-fired engine. See below.

40CSR30 - "Requirements for Operating Permits."

The facility is considered to be a deferred non-major Title V. The replacement emergency generator has no effect on Title V applicability.

45CSR34- "Emission Standards for Hazardous Air Pollutants for Source Categories Pursuant to 40 CFR, Part 63"

This rule establishes and adopts a program of national emission standards for hazardous air pollutants (NESHAPS) and other regulatory requirements promulgated by the United States Environmental Protection Agency pursuant to 40 CFR Parts 61, 63 and section 112 of the federal Clean Air Act, as amended (CAA). This rule codifies general procedures and criteria to implement emission standards for stationary sources that emit (or have the potential to emit) one or more of the eight substances listed as hazardous air pollutants in 40 CFR §61.01(a), or one or more of the substances listed as hazardous air pollutants in section 112(b) of the CAA. The Secretary hereby adopts these standards by reference. The Secretary also adopts associated reference methods, performance specifications and other test methods which are appended to these standards.

40 CFR 63, Subpart ZZZZ was review for applicability. See below.

40 CFR 60 Subpart JJJJ, "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines."

On January 18, 2008 the USEPA issued the NSPS for Stationary Spark Ignition (SI) Internal Combustion Engines (ICE). This rule outlines standards of performance for stationary spark ignition (SI) internal combustion engines (ICE). The rule segments applicability primarily by whether the applicant is an engine manufacturer, or an owner/operator.

The VA Medical Center is subject to Subpart JJJJ because the new emergency generator engine is a stationary SI ICE that commenced construction after June 12, 2006, and were manufactured after January 1, 2009 and has a maximum engine power greater than 25 hp.

The generator engine is USEPA Certified for the engine

manufacturer/Caterpillar Olympian and as such is not required to perform an initial performance test. The unit will be operated as an emergency generator and will be limited to 100 hours per year for operation during maintenance checks and readiness testing and non-emergency situations (limited to 50 hours out of the 100 hours). Additionally, the permittee will be required to operate and maintain the engine per the manufacturer's maintenance and emission-related written instructions.

Table 5: U.S. EPA 2015 Model Year Certificate of Conformity with CAA.			
Natural Gas-fired Generator Set	Engine Manufacturer/ Certificate Issued to:	Engine Family	Certificate Number
Caterpillar/Olympian G150LG Natural Gas Generator, 230.3 bhp, 150 kW, 187 kVA, 120/208 volt, three phase, 60 Hz with a 400 amp and 100 amp, 4 pole, Bypass Automatic Transfer Switches in NEMA Enclosures	Generac Power Systems, Inc.	FGNXB08.92C4	FGNXB08.92C4-054

40CFR63, Subpart ZZZZ “National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combust Engines”

Subpart ZZZZ establishes national emission limitations and operating limitations for HAPs emitted from stationary RICE located at major and area sources of HAP emissions. The subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.

The VA Medical Center is classified as an area source of HAP emissions (individual HAP with potential emissions less than or equal to 10 ton/yr; aggregated HAP with potential emissions less than or equal to 25 ton/yr) and will remain so after this modification.

The internal combustion engine for the emergency generator set is classified as an affected source under 40 CFR 63 Subpart ZZZZ. §§63.6590 (c) and (c)(1) state that for engines located at an area source of HAPs, if the source meets the requirements of Subpart JJJJ, that no requirements of Subpart ZZZZ apply to the engine. Thus, the proposed engine is not subject to any requirements of this subpart.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The combustion of natural gas in the new emergency generator results in the formation very small amounts of Hazardous Air Pollutants (HAP). The new engine will not emit any pollutants that are not already being emitted by other sources at the facility.

AIR QUALITY IMPACT ANALYSIS

The proposed modification is not classified as a major source as defined by 45CSR14 (PSD). For this reason no air quality modeling was required.

MONITORING OF OPERATIONS

60 CFR 60 Subpart JJJJ sets specific monitoring and record-keeping requirements for this limited use/emergency generator engine:

- Documenting the purpose for operating the engine and
- Performing regular, routine maintenance.

No additional monitoring was deemed necessary.

CHANGES MADE TO OLD PERMIT (R13-2290L)

A compare file comparing version M of the permit to version L of the permit is attached to this evaluation in Attachment 1.

RECOMMENDATION TO DIRECTOR

The VA Medical Center's request to add/construct one (1) new 150 kW/230.3 bhp natural gas-fired emergency generator to its Huntington, Wayne County, WV facility meets the requirements of 45CSR13 (Rule 13) and all other applicable rules, and therefore should be granted a Rule 13 modification permit (R13-2290M).

John Legg
Permit Writer

May 05, 2017
Date

ATTACHMENT 1

File Comparison

Comparing R13-2290M to R13-2290L

Department of Veterans Affairs

VA Medical Center - Huntington, WV

(099-00007)